ABSTRACT

Disclosed are a method of reducing spent oxides nuclear fuel to nuclear-fuel metal, in which metal oxides are reduced to metals using an electrochemical reduction device with $LiCl-Li_2O$ salt as an electrolyte, a cathode electrode assembly used in the method, and a reduction device including the cathode electrode assembly. The method is advantageous in that the process of reducing the spent oxide nuclear fuel to the nuclear-fuel metal and another process of recovering Li are united to simplify the whole processes, direct use of high oxidative Li metals is excluded to secure safety, and conversion efficiency of the spent oxide nuclear fuel is 99% or more.